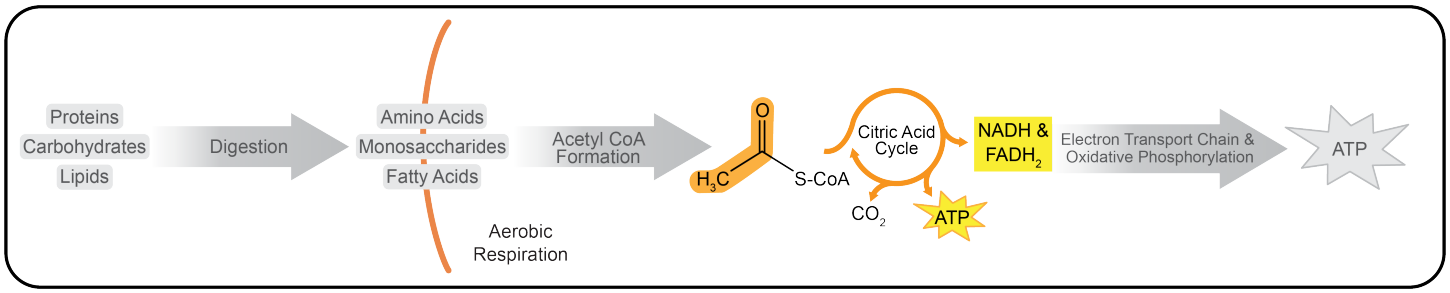
CONCEPT: INTRO TO CITRIC ACID CYCLE

- The citric acid cycle (aka Krebs cycle or _____ cycle) is a central stage in energy generation from food.
  - □ Oxidizes the **acetyl group** of acetyl CoA to produce high-energy molecules (ATP, _____, & _____).



- NADH and $FADH_2$ are utilized in the electron transport chain to produce energy required for _____ synthesis.

EXAMPLE: Which one of the following statements about the citric acid cycle is incorrect?

a) The CO_2 produced from the citric acid cycle is a product of oxidation.

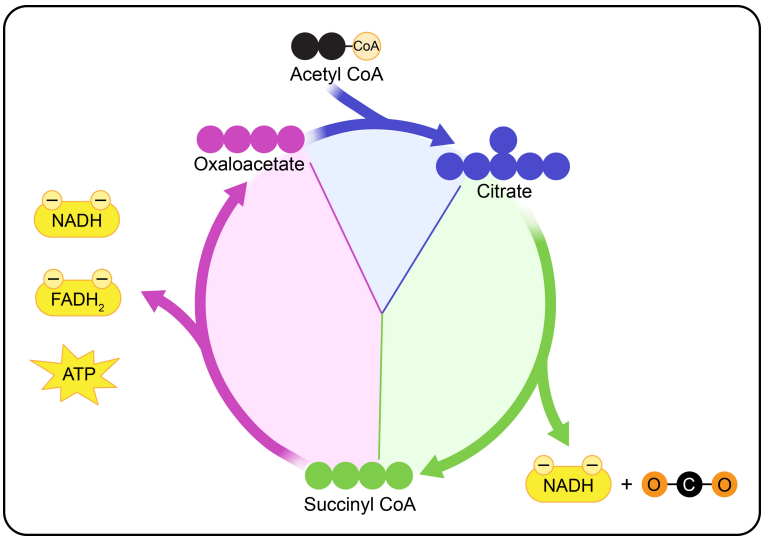
b) The citric acid cycle oxidizes the acetyl group of acetyl CoA to produce energy.

c) Oxidation reactions in the citric acid cycle produce coenzymes NAD^+ and FAD.

d) The citric acid cycle is a part of the common metabolic pathway.

Phases of the Citric Acid Cycle

- The citric acid cycle consists of multiple steps, which can be grouped into ___ phases:
  - (A) **Citrate Formation:** the acetyl group from acetyl CoA reacts with _____ to produce citrate.
  - (B) **Succinyl CoA Formation:** _____ and oxidation reactions convert citrate into succinyl CoA.
    - □ Produces NADH and CO_2.
  - (C) **Oxaloacetate Regeneration:** _____ and oxidation reactions convert succinyl CoA into oxaloacetate.
    - □ Produces NADH, $FADH_2$, and ATP.



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EXAMPLE: Identify each of the following statements about the citric acid cycle as true or false.

a) ____ Phase C of the citric acid cycle includes reactions that regenerate oxaloacetate.

b) ____ The first phase of the citric acid cycle uses acetyl CoA and oxaloacetate to produce citrate.

c) ____ The citric acid cycle relies on reduction reactions to produce high-energy molecules.

d) ____ Oxidation reactions in phase C produce CO_2.

PRACTICE: Which one of the following substances is a part of both phases A and C of the citric acid cycle?

a) Succinyl CoA

b) Oxaloacetate

c) Acetyl CoA

d) Citrate